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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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EXAMINER	
CHRISTIANSON, K	
ART UNIT	PAPER NUMBER
2813	

DATE MAILED: 09/26/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

# Office Action Summary

Application No.  
09/689,845

Applicant(s)  
Dhindsa et al.

Examiner  
Keith Christianson

Art Unit  
2813



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on Jul 12, 2001
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above, claim(s) 12-18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 and 19-31 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claims \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- a) ☐ All b) ☐ Some\* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \*See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

## Attachment(s)

- 15) ☒ Notice of References Cited (PTO-892) 18) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 19) ☐ Notice of Informal Patent Application (PTO-152)
- 17) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s). 2 20) ☐ Other: \_\_\_\_\_

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## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371© of this title before the invention thereof by the applicant for patent.

2. Claims 1-4 and 7-11 are rejected under 35 U.S.C. 102(e) as being anticipated by Hao et al. (US 6,123,775). Hao et al. describe a showerhead electrode which has a step projecting from the exposed surface of the electrode (e.g. element 36 in Fig. 4A). The central portion of the electrode is substantially planar, the step has an inner surface adjacent to the central portion of the electrode, a bottom surface substantially planar to the substantially planar surface of the electrode and an outer surface opposite the inner surface (Fig. 5). The step may be located inwardly such that a portion of the electrode extends beyond the step (Fig. 5). The step may be an integral part or bonded (column 6, lines 5-8). The thickness of the step can be adjusted and may extend completely around (column 5, lines 37-40). The electrode may be made of silicon, silicon carbide, graphite, or aluminum (column 3, lines 51-54).

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hao et al.

Hao et al. do not describe the inner surface of the step forming an obtuse angle.

However, this is an obvious design choice in order to optimize the step for its intended purpose. Thus, it would be obvious to one of ordinary skill in the art that the step sides as described by Hao et al. could be at an angle other than 90 degrees in order to optimize the intended use of the step.

5. Claims 19-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hao et al. and further in view of Kurono et al. (US 5,779,803). Hao et al. describe a shower head electrode with a step, but do not describe its incorporation into a plasma apparatus.


However, Kurono et al. describe an plasma etching apparatus with an edge ring in which this type of showerhead could be used. The edge ring is described as being made of quartz, silicon or silicon carbide (column 4, lines 35-48). Thus, it would be obvious to one of ordinary skill in the art that the shower head electrode as described by Hao et al. could be incorporated into a plasma apparatus as described by Kurono et al. in order to use the superior properties of the described showerhead electrode in a plasma apparatus with an edge ring in order to further prevent the marginal portion of the wafer from being etched (Abstract).

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***Conclusion***

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Keith Christianson whose telephone number is (703) 305-4029. Electronic communication may be directed to the examiner at keith.christianson@uspto.gov. The examiner can normally be reached on Monday to Friday from 6:30 AM to 3:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles Bowers, can be reached on (703) 308-2417. The fax phone number for this Group is (703) 308-7722.



Keith Christianson  
Primary Examiner  
Technology Center 2800

September 23, 2001